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EXCAVATING A TYRANNOSAURUS SKULL, MONTANA.

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The Museum is open free to the public on every day in the year.

* Deceased

2 UPPER DINOSAUR CLAYS, BASAL SANDSTONE AND CONCRETIONS. GILBERT CREEK, MONTANA

The American Museum Journal

Vol. X JANUARY, 1910 No. 1

THE TYRANNOSAURUS

IN the southeast corner of the Dinosaur Hall are the remains of the largest beast of prey that ever lived. This is the *Tyrannosaurus*, the great Carnivorous Dinosaur of the Cretaceous Period. Forty feet in length, with huge and massive skull, the jaws four feet long armed with sharply pointed teeth each projecting from two to six inches from the socket, this monster is beyond comparison the greatest carnivorous animal that ever inhabited the land.

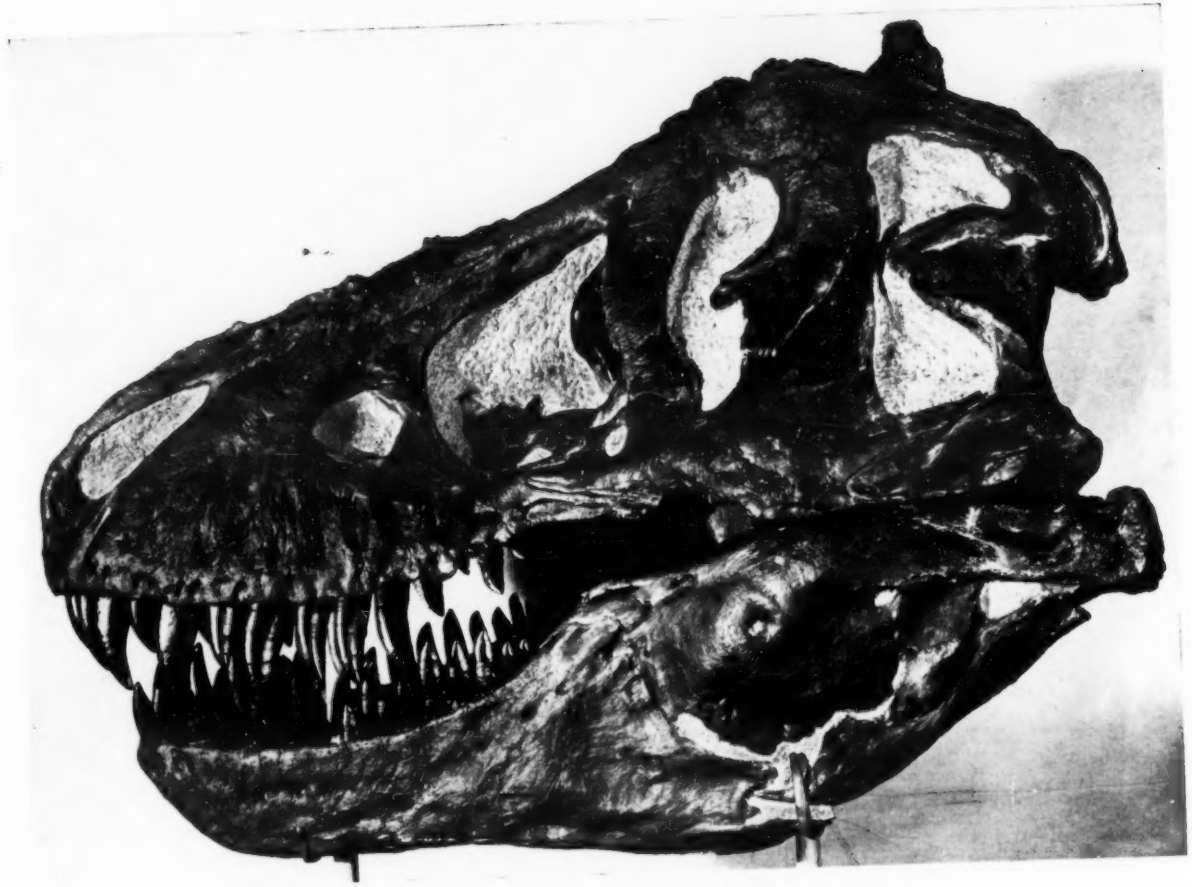
The Museum has been peculiarly fortunate in securing three skeletons of this rare dinosaur. All of them were found by Mr. Barnum Brown of the Department of Vertebrate Palæontology on different expeditions. The first, from near Edgemont, South Dakota, was discovered in 1900 and includes the lower jaws, many vertebræ and ribs and a few bones from the limbs and feet. The second was obtained in 1902 on Hell Creek in central Montana and consists of a large part of the skull and jaws, most of the vertebræ of the back and the nearly complete pelvis and hind limbs. Since then Mr. Brown has searched diligently for additional remains of this animal, and in 1908 he was so fortunate as to find a skeleton in splendid preservation, and perfect except that it lacked the limbs and the tip of the tail. The rock in which these skeletons were found is a loosely cemented sandstone, but the skeletons themselves are partly or wholly encased in great concretionary masses of flinty hardness. Extracting the bones uninjured from these iron-hard concretions is a slow and difficult task and is not yet complete on the third and finest of the skeletons.

The skull and jaws and the pelvis and hind limbs of the second skeleton have been restored and mounted in the hall, as previously noticed in the JOURNAL. The skull and jaws of the third and finest skeleton of the Tyrannosaur have recently been placed in a case beside them. This specimen, which is the first really complete skull of a carnivorous dinosaur known to science, is of inestimable scientific value. It is beyond question the most impressive dinosaur skull ever found and

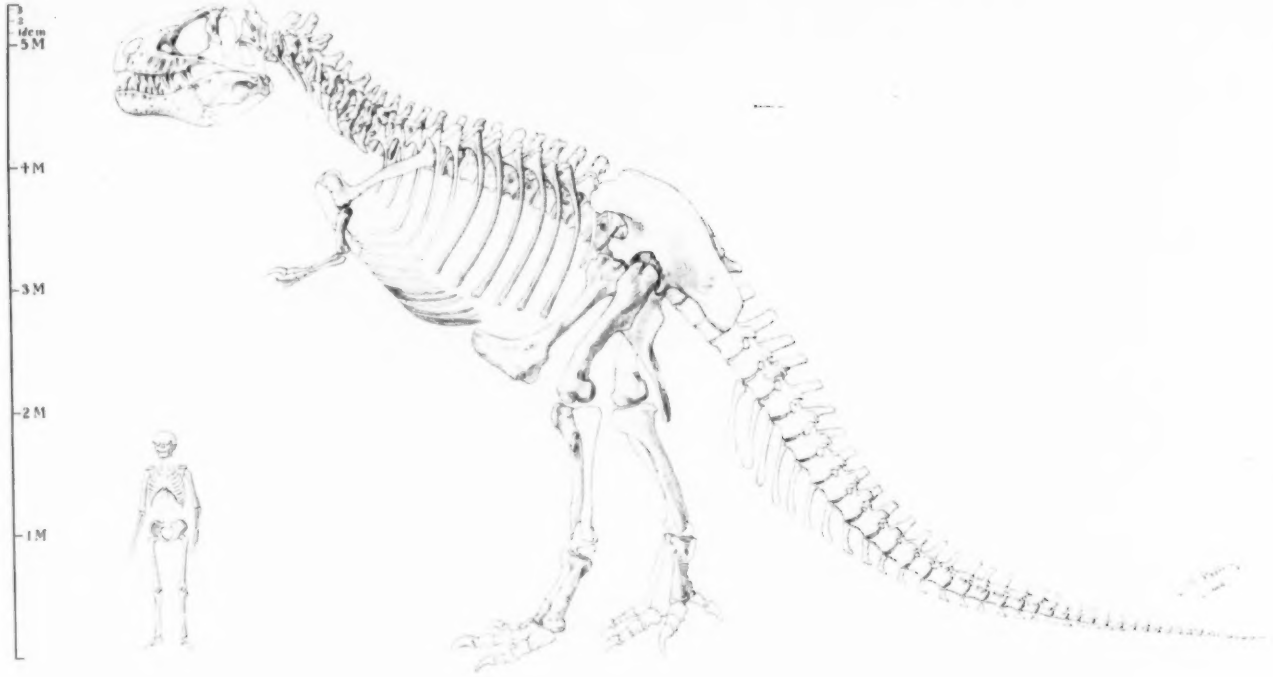
4 TYRANNOSAURUS SKELETON UNCOVERED AND READY TO BE TAKEN UP. BIG DRY CREEK FORTY MILES SOUTH OF GLASGOW, MONTANA

WORKING ON SKULL OF TYRANNOSAURUS. QUARRY FORTY MILES SCUTH OF GLASGOW, MONTANA

BOXING PELVIS OF TYRANNOSAURUS. TWO TONS IN WEIGHT. BIG DRY CREEK, FIFTY MILES SOUTH OF GLASGOW, MONTANA



TYRANNOSAURUS. MOUNTED SKULL IN MUSEUM



TYRANNOSAURUS. RESTORATION FROM SPECIMENS IN THE MUSEUM

presents several unusual features, notably the distinct sutures which clearly define every element of the skull and the definite size and position of the orbit.

The present arrangement is temporary. As soon as the skeletons can be restored and the missing parts in each modeled or cast, the one from the other, it is intended to make a group consisting of the two Tyrannosaurs standing over the mummied carcass of a Trachodon, a unique specimen which was purchased last year from Mr. Charles H. Sternberg and noticed in the JOURNAL for April, 1908. This group will make a very effective and striking centerpiece for the Hall of Cretaceous Dinosaurs which is planned for the future development of the Museum.

There is no living beast of prey that compares with the great carnivorous dinosaurs or which habitually attacks the largest herbivorous animals. The lion and the tiger prey upon the medium-sized and smaller hoofed animals; they do not usually molest the great "pachyderms" (the elephant and the rhinoceros), and the indefinite multiplication of these giant ungulates is checked by other means. But during the Age of Reptiles it was different. The *Allosaurus* of the Jurassic, the *Tyrannosaurus* of the Cretaceous, were fitted by nature to attack and prey upon the largest of their herbivorous contemporaries; and the size and power of their weapons for attack far surpass anything seen among modern carnivores or those of the Age of Mammals. Conversely the largest herbivorous dinosaurs wore armor or weapons for defense much heavier and more powerful than can be found among the great pachyderms of modern times, whose thick skin is mainly a protection against accidental injury or the attacks of insects. The great horns and bony neck-frill of *Triceratops* and the armor-plated head and body of *Ankylosaurus* were developed no doubt to resist the attacks of the huge Tyrannosaur. Other contemporary dinosaurs like *Trachodon* were unarmored but were evidently adapted to a more amphibious life and sought refuge in swimming beyond the reach of their great enemy. Others again of much smaller size were agile and active and probably escaped by superior speed.

MR. GEORGE S. BOWDOIN, one of the Trustees, has presented to the Museum a fine old native basket from the Hope Islands in the South Pacific Ocean.

A VISIT TO THE OJIBWAY AND CREE OF CENTRAL CANADA

A BAND of Ojibway Indians occupies that region of central Canada lying between Hudson Bay and the Great Lakes, and a band of Cree lies directly north of them. These tribes it was my good fortune to visit during the past summer, sent by the Department of Anthropology of the Museum. On the first day of June starting from Dinorwick, the little Hudson's Bay Company post some 200 miles east of Winnipeg on the Canadian Pacific Railroad, I began the expedition accompanied by two guides, one of whom, Tom Bain by name, was head-guide for the Museum's expedition into the James Bay region in 1908. Our equipment was light, consisting merely of a tent and blankets, food, guns and necessary ammunition. These we carried nine and one half miles to Sandy Lake where we loaded them into an eighteen-foot cedar canoe, our bark for the remainder of the trip.

From Sandy Lake we journeyed four days northward to Lac Seul, touching at several Ojibway villages and camps by the way and coming in rather dangerous proximity to a serious forest fire. We made our first permanent camp at Lac Seul. About eight hundred Ojibway trade at this point, and at first they were inclined to be suspicious of us. They became decidedly hostile and threatening after they learned that our object was to study their manners and customs, so that, although we spent about ten days among them, we were able to secure little information and but few specimens.

At length, finding that our efforts were bringing no results, we set out for our next stopping place, Fort Osnaburgh on Lake St. Joseph, but after a day's paddling found that the guide did not remember the route. We were obliged to return to the Lac, which we reached a little after midnight. For some time before nearing our camping ground we could hear the Indians drumming and singing back in the woods, and after we pitched our camp not far away from where the Indians were, we could hear very distinctly what was going on. The medicine man or shaman was making medicine against us and particularly against me. His incantations, however, proved of no avail, at least we can truthfully say that we have felt no ill effects from his charms as yet. The following morning, we secured a friendly Cree who was living among the Ojibway at this point to guide us on our way to Fort Osnaburgh. The journey

from Lac Seul to Fort Osnaburgh led through the Root River, across the Height of Land into Lake St. Joseph.

The Root River although quite deep is a sluggish stream and narrow most of the way, varying from five to fifty feet in width. Moose, caribou and deer frequent its low and swampy shores. On our first day out we saw a yearling cow moose on the bank, and a shot from my carbine put us in possession of a much needed supply of fresh meat. On the following day we saw two more moose, and owing to the skillful and

YORK BOAT ASCENDING THE ALBANY RIVER

Supplies from Europe for the Hudson's Bay Company are still sent around Labrador into Hudson Bay, a journey of many months.

silent paddles of the Indians, were able to approach within fifty feet of one of them before she saw us. The day after, we again saw two moose and on the following day another pair. The last moose which we saw was an immense bull, and his horns, which were still in the velvet, were of enormous size, though it was only the middle of June. During the long time that we watched he remained in the middle of a small round basin caused by an expansion of the river and was evidently feeding on roots or weeds beneath the surface of the water. Sometimes he sank completely out of sight, even the ridge of his back disappearing from view.

My men stated that this was most unusual, though Bain said that he had once before seen a moose go completely under the water.

We found the Indians at Fort Osnaburgh also inclined to be hostile. The band at Lac Seul had sent warning messages that they were to have nothing to do with us, as our purpose in coming to their country was to steal little boys. The fact that I wore spectacles also militated against me, as the Indians believed that my glasses could see completely through them and read their thoughts. The Hudson's Bay Company had suspected several Indians of various petty misdemeanors and these Indians showed their guilty consciences by moving away as soon as we arrived. After some effort, however, we managed to come to friendly terms with these people and gained some results here.

"PACKING" ON THE MISSANABIE RIVER

All goods and specimens must be transported in this manner part of the way in the forest.

From Fort Osnaburgh we left Lake St. Joseph and descended the Albany River, about four days' journey, when we turned aside and entered Lake Eabamet where the Hudson's Bay Company has long had a post known as Fort Hope. At Fort Hope there had been listed by Government census 513 Indians who were drawing annuities of four dollars each for England's use of the Canadian territory, but the epidemic of influenza which swept the Indians of northern Canada last year had carried away eighty of them during the winter.

We arrived at this place just before the Government men who were to pay the Indians their annuities. Hence we found the Indians all

GOVERNMENT PAYMASTER DISTRIBUTING ANNUITIES TO THE FORT HOPE INDIANS

FEAST FOLLOWING THE RECEIPT OF ANNUITIES

The men form the inner circle, while the women and children sit outside

gathered in camp around the Hudson's Bay Company's and Revillon Frères' stores. These Indians also were afraid of us, as they had been warned by messages sent from Lac Seul as to our kidnapping propensities. I almost immediately got myself into difficulty by giving a ten cent piece to an attractive baby. A council was called at once to determine whether I was attempting to charm the child to death or not. But the missonary and the Hudson's Bay and Revillon Company's factors got word of it, came to Fort Hope and persuaded the Indians that our intentions were not bad.

The Indians decided, however, to send for their most noted shaman, Waboose-Inini or "Rabbit Man." The old fellow was hunting some distance from the Fort but put in his appearance a few days later, camping about three miles outside of the Post. He immediately sent word to me that he wished to see me. To this I replied that I was very busy and could not bother with coming. A second messenger shortly arrived inquiring why I was so busy that I could not see so great a man as Waboose-Inini. My reply was that I was learning all about shamanism from another medicine-man — a rival whom we knew the old fellow did not like. Waboose-Inini arrived next morning at our camp and we kept busily employed writing in our notebooks all the morning, while the old man sat about smoking. Toward noon he would have departed, but I asked him to stay for dinner, and on the following day the old man appeared again about meal time. This time he was not only invited to stay, but I gave him something to eat from my plate. He told me that no white man had honored him so before. When on the third day, he happened around at the noon hour and was again invited to dine, his delight knew no bounds and he burst out with, "'Tell the young white chief that if there is anything he wants to know, I will tell him. I know everything. These other people are nothing but old women. I am the only one about here who knows how to make medicine."

After this, we were on most friendly terms and the other Indians seeing that I was accepted by the shaman also became friendly so that we were able to secure many photographs and quite a collection of specimens, notwithstanding that the Indians were at first afraid of the camera and in spite of the fact that most of the old customs have gone out within the past fifty years.

Few of the Northern Indians now seem to practise their ancient culture, in fact, they are much less primitive in many ways than our own

ANGLICAN CHURCH MISSION AND INDIAN VILLAGE, FORT HOPE, KEEWATIN

THE MISSION SCHOOL AT FORT HOPE

Ojibway children are still taught their own language by the English missionaries

OJIBWAY LADS. FORT HOPE

OJIBWAY MOTHERS AND BABIES. FORT HOPE

EASTERN CREE "CACHE." BLACK BEAR POINT, JAMES BAY

Supplies placed on scaffold out of reach of dogs and wolves.

reservation Indians who have been in contact with the white people for so many years. The reason for this is twofold. In the first place, most of the tribes in the United States were by nature warlike, while those of the north were hunting peoples, gentle and rather timid in character. In the second place, our Indians have been surrounded by a great number of white people who came among them as enemies. They have been isolated in groups among people whom they dislike. For this reason they have striven to preserve their identity as Indians, in so far as that was possible. In Canada, on the other hand, the white people in the northern district are still greatly in the minority. They have come among the Indians slowly and have come as friends. The Hudson's Bay Company has done a great deal toward rendering the existence of the Indians less difficult. White men's clothing, good food, implements and many other useful things have been given in exchange for fur. The side of the white man which the Indian has seen is an admirable one and worth striving to imitate in every way.

While we were at Fort Hope, the Indians were visited by Government treaty representatives. The arrival brought about much rejoicing on the part of the Indians, exhibited in firing of guns and in daily feasts

and dances. At this time the Indians received the only medical attention which they will have until another year has passed.

After a stay of several weeks at Fort Hope, we decided to leave. Old Rabbit Man seemed very sorry to see me go and, wishing no doubt to do the proper thing, decided to present me with his small daughter, a girl of about eight years of age. Needless to say, I was somewhat embarrassed by this and asked why I was so honored. "Make you fine wife," replied the old fellow. "But she is too young," I replied. "That makes no difference, my friend," said Rabbit Man. "Take her now. Bring her up right. She will love you all the more when she gets older." I finally explained that I was a poor young man and did not catch many beaver and was not in any position at the present time to support a young lady in proper state. The old man was satisfied and we proceeded on our journey.

WIGWAM AT FORT HOPE

The bark wigwam is still occasionally constructed by the Eastern Ojibway.

Below Fort Hope, along the Albany River as far as Martin's Falls we caught beautiful trout but saw little game. From Martin's Falls we passed down to Fort Albany on James Bay, then coasted Hudson Bay for 120 miles to Moose Fort. Immense flocks of ducks, plover and various water and shore birds were frequently encountered. On one occasion we ran into a herd of white whales which sported about the canoe. My men shot ducks and geese to help out our provisions, and in addition, killed several hawks which they roasted and ate and which, to my surprise, proved quite palatable.

The journey up the river was rather uneventful, except that I was fortunate enough to kill a yearling bull moose about 150 miles south of the Bay. This was the first fresh meat that we had had since the moose I killed on the Root River some two months before. Incidentally, it may be said that we had no vegetables from the time we went in until the time we came out. After a return journey of sixteen days on the Missanabie or Moose River, we arrived at Missanabie on the Canadian Pacific Railroad August 27.

It appears that the Ojibway visited once lived in a neighborhood considerably farther south, possibly in northern Minnesota, whence they pushed northward, almost to Hudson Bay. Since coming to the North, they have not only given up many of the manners and customs of the typical Ojibway of the south but have also taken on some of the customs of the Eastern Cree. In addition they have evolved some new points of culture distinctively their own. All of these factors set them off as a distinct and separate body from the well-known historical Ojibway.

There was secured upon the expedition a series of the articles of aboriginal manufacture now used by the Cree and Ojibway of the Hudson Bay Region. These articles consist of household utensils, games, clothing and a few ceremonial articles. At the same time, full notes on the ethnology and folk lore were made, and the results will soon be published.

ALANSON SKINNER.

MOSS AND BALSAM BOUGHS FOR BEDDING. RUPERT'S HOUSE, JAMES BAY.

MINERAL ACCESSIONS

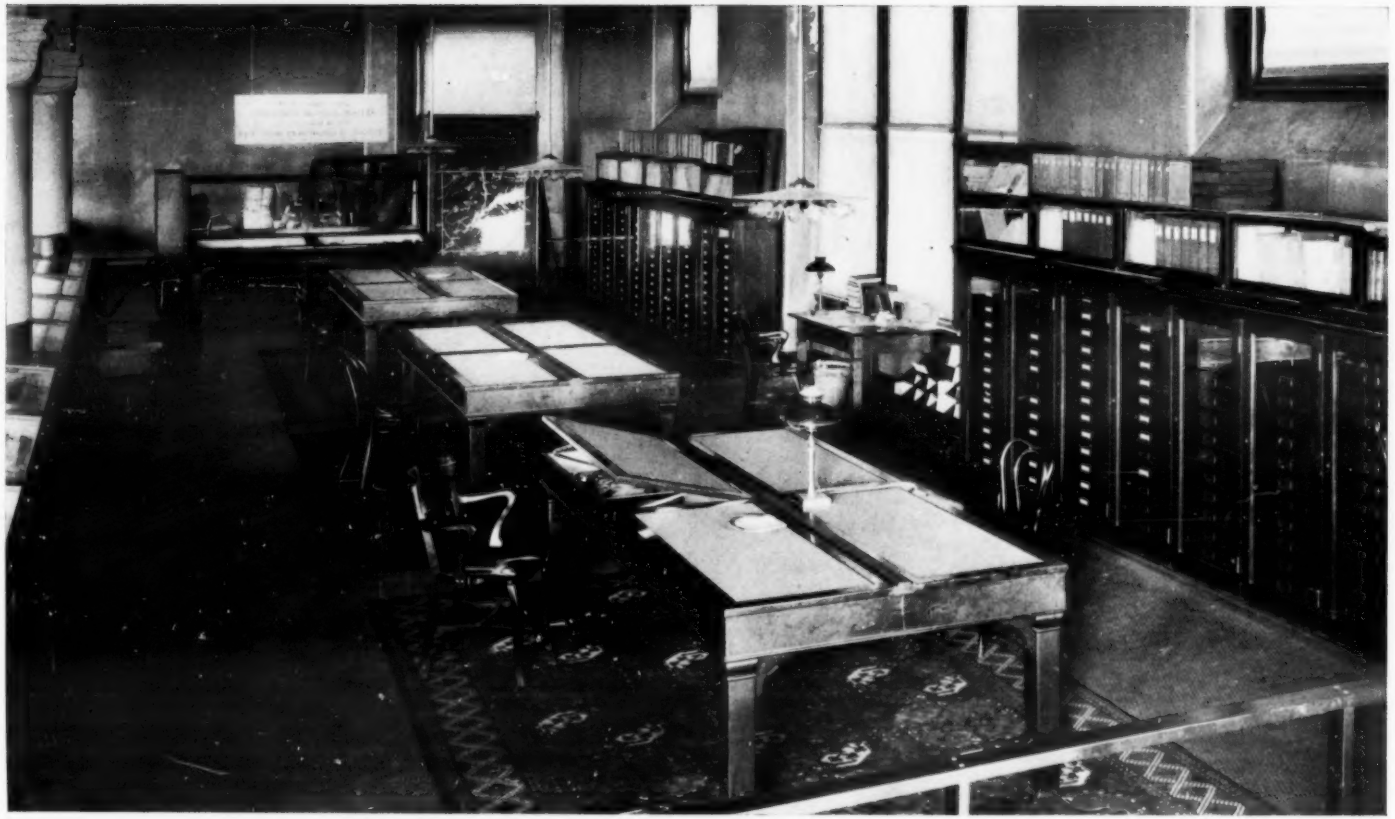
THROUGH the Bruce Fund the Mineral Collection has received some attractive mineral specimens, including several species new to the collection and others from new localities or of unusually perfect crystallographic development. Among the specimens is a group of Iodyrite crystals from Tonopah, Nevada, illustrating some of the hemimorphic forms described recently by Kraus and Cook, a handsome surface of dark-green prismatic Brochantite, a hydrous sulphate of copper, from Chili and a striking veinlet of the same mineral in fibrous form which has been changed to red oxide of copper (Cuprite), possibly, in a measure, through the agency of heat.

Among the remarkable mineral developments at Chuquicamata, Chili, which furnishes the Brochantite, are very beautiful light-green pyramidal crystals of Kröhnkite, and the collection has secured an admirable example of this unique occurrence. Less noteworthy though valuable are some specimens of minerals which possess individual interest for crystal perfection, and among these may be mentioned a handsome Apatite from Hebron, Maine, which for a long time remained an unattainable ornament of a private collection, a small perfect Spodumene (Kunzite) crystal in its matrix, a New Hampshire Topaz and Phenacite, a beautiful blue Topaz from a new locality in Texas, some ruby Corundum from North Carolina, translucent crystals (viewed through the shorter axis) of Phlogopite from Franklin Furnace, N. J., and a delicately arborescent native Silver. In addition to these, specimens helpful for the scientific illustration of their respective species have been purchased, and the collection sensibly maintained abreast of the rapidly increasing development of the subject, through this indispensable endowment.

L. P. GRATACAP.

THE LOCAL COLLECTION OF INSECTS

THERE are about ten thousand species of insects occurring within fifty miles of New York City, but up to the present year, owing to the pressure of other work and the lack of funds, the Museum collection representing these insects attained to only twenty-five per cent



NORTH SIDE OF INSECT GALLERY

Collection of Local Insects. Meeting Room of the New York Entomological Society

of this number. Now efforts are being made not only to complete the collection, but also to install it in a way convenient for use, so that it may be of value as an aid in the difficult task of identifying specimens and as a record of this branch of the local fauna.

Considerable collecting was done during the past summer to help fill up the gaps in the series, and now the New York Entomological Society has kindly undertaken to assist in the work. In fact the custody of the collection has been turned over to the Society, which has chosen a curator whose duty it is to care for the specimens and to attend to keeping the records. Several times a month members of the Society meet at the Museum and spend the greater part of the day working over the collections, adding from their private collections the species which are lacking and seeing that all specimens are correctly identified and labeled. The importance of the work that they are doing cannot be overestimated. When one realizes that within fifty miles of New York City there are still more than seven thousand species of insects which are not represented in our collection, it will be seen what a task has been undertaken. Considerable progress, however, has already been made. Messrs. Angell, Bischoff, Dow, Englehardt, Harris, Joutell, Leng, Schaeffer and Wintersteiner are taking up the Coleoptera group by group, and of the one hundred twenty-five species which they have considered the local collection now contains one hundred eleven, whereas it formerly contained only eighty-three. Messrs. Comstock, Pollard and Watson are paying particular attention to the Lepidoptera; Dr. Love has undertaken the non-parasitic Hymenoptera; Messrs. Barber and Olsen, the Hemiptera, and Mr. Davis has already straightened out the Orthoptera and Odonata and expects to arrange the lower orders. Thus it will be seen that with the exception of the Diptera and the parasitic Hymenoptera the local insect collection is in the hands of men well competent to take care of them.

In connection with the work and to facilitate the study of the local collection some important alterations have been made on the north side of the gallery of the Insect Hall. The collection has been taken out of the open exhibition cases and put into light-proof cabinets along the side of the hall. Reference books and instruments have been provided and cork-topped tables in which are lockers where students may keep their material. Visitors desiring to consult the collection now may do so by asking the attendant to unlock the cabinets for them. The valuable

library of the Museum and that of the Entomological Society are available for convenient reference.

The space in the exhibition cases formerly occupied by the collection of local insects is being filled with exhibits aiming to show both the practical and theoretical sides of entomology, particular emphasis being laid upon insect ecology, or relation to the factors of environment.

RECENT ACCESSIONS TO THE DEPARTMENT OF GEOLOGY

THE Department of Geology is fortunate in having received recently as a gift from the Delaware, Lackawana and Western Coal Company, through its president, Mr. E. E. Loomis, a fossilized tree stump from the Diamond vein of one of the anthracite coal mines under the city of Scranton, Pennsylvania. The thickness of the coal in this vein was eight feet and its top was seventy feet below the surface of the ground. The vein was exhausted here thirty-five years ago and no mining has been done since. Recently one of the mine officials was examining these old workings and on top of the refuse on the floor of the gallery discovered the fossilized stump of a tree in perfect condition. The trunk was probably more than two feet in diameter and the spread of the remains of the roots is more than ten feet across. The stump evidently dropped from the roof some years after mining had been finished, and the specimen was apparently unnoticed when active operations were in progress, since the bottom of the fossil conformed to the roof line of the workings. The cavity from which the stump dropped shows that the trunk of the tree stood in a vertical position.

Through the generosity of Dr. Charles E. Slocum of Defiance, Ohio, a Life Member of the Museum, and with the coöperation of the Kelley Island Lime and Transport Company, we have been able to extract from the quarries at Kelley's Island, Ohio, and transport to the Museum a splendid block about 8×10 feet in size representing the glacial grooves for which the Island is famous. Several deep grooves traverse the block, the principal one of which is about 12 inches deep. The higher parts of the surface show glacial scratches at an angle to the deep grooves, indicating a change of direction of movement in the ice during the latter part of its history or the work of a glacier advancing from a different center. Portions of the surface are polished almost as highly as they would be if the work had been done by hand.

SCIENTIFIC PUBLICATIONS DURING 1909

THE scientific publications of the Museum consist of the MEMOIRS, the BULLETIN and the ANTHROPOLOGICAL PAPERS. The wide range of research carried on by the Museum is indicated by the titles of the articles comprising the volumes as given in the following list. Although these articles are technical in character many of them have general as well as scientific interest. They are issued separately and with the exception of those marked with an asterisk may be obtained from the Librarian. Those which are marked with an asterisk are published by E. J. Brill, Leiden, Holland, and are not on sale at the Museum. They may be obtained through G. E. Stechert, Bookseller, 129 West 20th St., New York City.

MEMOIRS.

Anthropology.

VOL. IV, *PART VII.— The Shuswap. By JAMES TEIT. Pp. 443–789, pll. xiii–xiv and 82 text figures.

VOL. VIII, *PART II.— The Kwakiutl of Vancouver Island. By FRANZ BOAS. Pp. 301–522, pll. xxvii–lii and 142 text figures.

VOL. XI, *PART III.— The Chuckchee: Social Organization. By W. BOGORAS. Pp. 537–733, pl. xxxv and 1 text figure.

Zoölogy and Palæontology.

VOL. IX, PART V.— Studies on Fossil Fishes (Sharks, Chimæroids and Arthrodires). By BASHFORD DEAN. Pp. 209–287, pll. xxvi–xli and 65 text figures.

VOL. IX, PART VI.— The Carnivora and Insectivora of the Bridger Basin, Middle Eocene. By W. D. MATTHEW. Pp. 289–567, pll. xlii–lii and 118 text figures.

BULLETIN, VOLUME XXVI.

(Sixty-five plates and 119 text figures.)

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Special Publication.

*The Anatomy of the Common Squid. By LEONARD WORCESTER WILLIAMS. Pp. 1–87, pll. i–iii and sixteen text figures.

MUSEUM NEWS NOTES.

THE Department of Vertebrate Palæontology has received as a gift from Mr. Charles Lanier, one of the Trustees, a skull of the great Cretaceous dinosaur Triceratops. This specimen was collected in the Laramie Cretaceous of Seven-Mile Creek, Western County, Wyoming, about 45 miles northwest of Edgemont, South Dakota, by

Mr. Charles H. Sternberg and is considered the second finest example ever discovered.

THROUGH the bequest of Miss Phebe Anna Thorne, the Museum is to receive ten thousand dollars for its permanent endowment. The income of the fund is to be used in such a manner as to perpetuate the memory of her father.

THE path of Halley's comet has been added to the planetarium in the Foyer, and the position of this transient visitor to the solar system will be indicated daily during the next few months, while the comet is visible to the unaided eye.

THE Department of Anthropology has recently been enriched by the accession of two large local collections. The first of these was made on Manhattan Island by Messrs. Calver and Bolton. It is particularly valuable, because the sites on the upper end of the Island, whence the objects were obtained, are fast becoming obliterated. Several skeletons are particularly interesting as being the only authentic remains of the Manhattan aborigines known. There is also a large and perfect pottery vessel of the Iroquoian type from the upper end of Manhattan Island. This collection was described and many of the objects figured by Mr. Bolton in Volume III of the "Anthropological Papers" and in the Hudson-Fulton number of the JOURNAL for October, 1909. The second collection was made on Staten Island during the years 1900–1909 by Mr. Alanson Skinner of the Department of Anthropology and is the largest and most complete in existence from this locality, consisting of nearly 1200 specimens. The collection is described and figured by Mr. Skinner in Volume III of the "Anthropological Papers," and in the JOURNAL for October, 1909. Figures 9, 10, 11 and 12 illustrate specimens largely drawn from this collection.

SINCE our last issue the following persons have been elected to membership in the Museum: Sustaining Members, Messrs. ERNEST C. BLISS, TEMPLE BOWDOIN, WM. H. FISCHER, GEORGE COE GRAVES, WALTER C. HUBBARD, ALBERT TAG, F. D. UNDERWOOD and EGERTON L. WINTHROP; Annual Members, Messrs. FRED'K GIRARD AGENS, G. L. BOISSEVAIN, A. H. CASPARY, F. R. HAZARD, WALKER D. HINES, MINOR C. KEITH, MORRIS KINNEY, ANTHONY R. KUSER, GEORGE A.

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LECTURE ANNOUNCEMENTS.

PEOPLE'S COURSE.

Given in coöperation with the City Department of Education.

Tuesday evenings at 8:15 o'clock. Doors open at 7:30.

The first four of a course of five lectures by MR. CHARLES M. PEPPER on "The Twentieth Century South America."

January 4.—"Panama to Patagonia."
January 11.—"Argentine, the World's Wheatfield."
January 18.—"The Vastness of Brazil."
January 25.—"Colombia and the Andes."

Saturday evenings at 8:15 o'clock. Doors open at 7:30. The first four of a course of six lectures by PROF. JOHN C. OLSEN on "Pure Foods and their Preparation."

January 8.— "Food Values; Cereals and Their Products."
January 15.—"Milk and Milk Products."
January 22.—"Bacteria and Preservatives."
January 29.—"Fats and Oils."

Children are not admitted to the lectures of the People's Course, except on presentation of a Museum Member's Card.

LEGAL HOLIDAY COURSE.

Fully illustrated. Open free to the public. No tickets required. Doors open at 2:45, lectures begin at 3.15 o'clock.

New Year's Day, January 1, 1910. ROY W. MINER, "Sea Animals of Our Shores."

Washington's Birthday, February 22, 1910. EDMUND OTIS HOVEY, "Some American Mining Regions." Particularly those producing Coal, Iron, Copper, Gold and Silver.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and its Affiliated Societies will be held at the Museum during January as usual.

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AMERICAN MUSEUM OF NATURAL HISTORY

Stokes Paintings representing Greenland Eskimo

GUIDE LEAFLET NO. 30

NOVEMBER, 1909

American Museum of Natural History

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THE AMERICAN MUSEUM OF NATURAL HISTORY was established in 1869 to promote the Natural Sciences and to diffuse a general knowledge of them among the people, and it is in cordial coöperation with all similar institutions throughout the world. The Museum authorities are dependent upon private subscriptions and the dues from members for procuring needed additions to the collections and for carrying on explorations in America and other parts of the world.

The membership fees are,

Annual Members	$ 10	Fellows	$ 500
Sustaining Members (Annual)	25	Patrons	1000
Life Members	100	Benefactors (Gift or bequest)	50,000

All money received from membership fees is used for increasing the collections and for developing the educational work of the Museum.

The Museum is open free to the public on every day in the year.

* Deceased

The Stokes Paintings Representing Greenland Eskimo

A DESCRIPTION OF THE

MURAL DECORATIONS OF THE ESKIMO HALL

GIVEN TO THE

American Museum of Natural History

BY

ARTHUR CURTISS JAMES

No. 30

OF THE

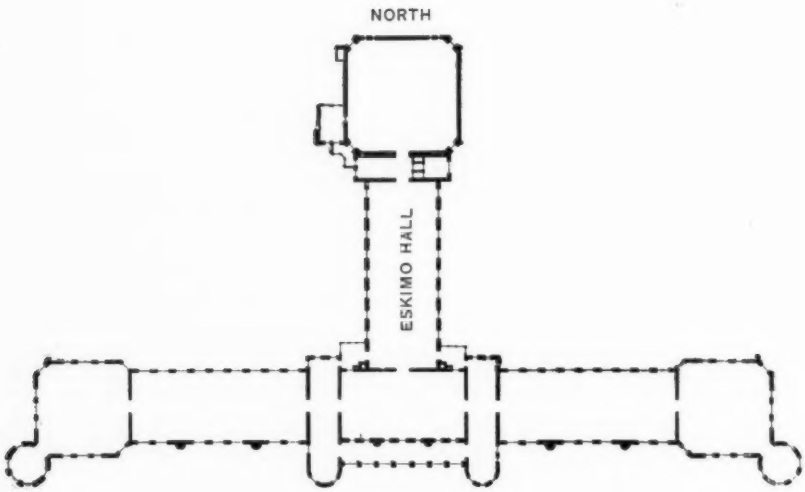
GUIDE LEAFLET SERIES

OF THE

AMERICAN MUSEUM OF NATURAL HISTORY

EDMUND OTIS HOVEY, EDITOR

New York. Published by the Museum. November, 1909



Floor plan of the ground floor of the Museum, showing the location of the Eskimo Hall, where are displayed the Stokes paintings presented by Mr. Arthur Curtiss James.

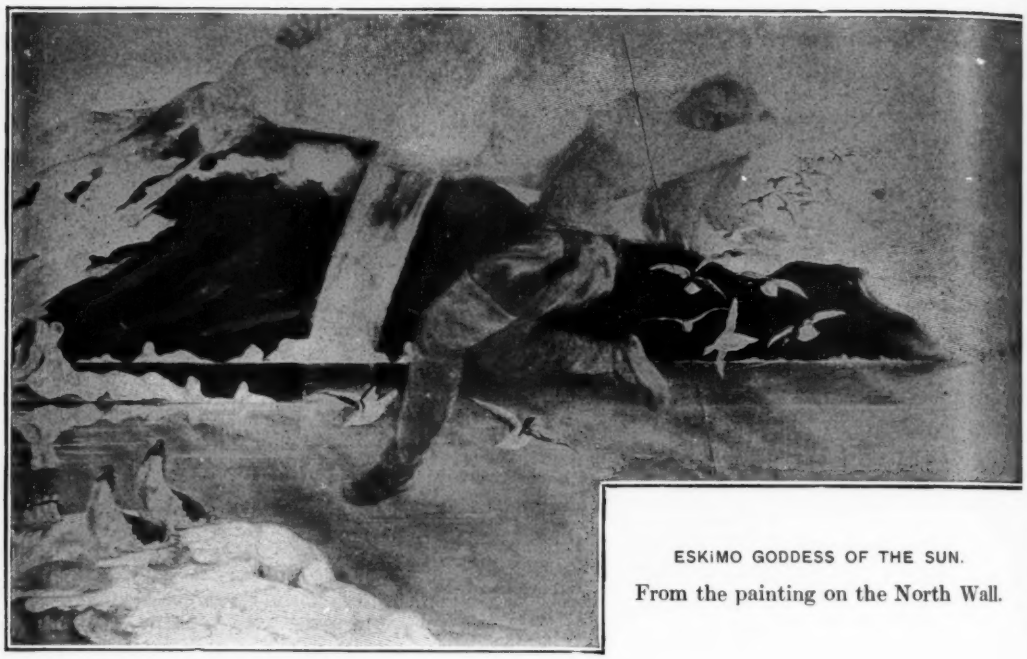
THE STOKES PAINTINGS REPRESENTING GREENLAND ESKIMO.

THE mural decorations at the northern end of the Eskimo Hall have been painted by Mr. Frank Wilbert Stokes, an artist, who, as member of the Peary Relief Expedition of 1892 and of the Peary North Greenland Expedition of 1893 and 1894, has made careful study of the Eskimo people and their frozen country. The Museum is indebted for these paintings to Mr. Arthur Curtiss James, one of the Trustees.

Ranged about the hall below are the weapons, the articles of dress, the boats, the sleds, while above them in this painted frieze these same objects are seen put to use in the daily activities of the Eskimo, revealing his adaptation to an environment of months' long days and nights among glaciers and icebergs. The combination of the scientific exhibits below and the artist's work above, brings home to the observer not only the ethnological facts involved, but also other facts, such as the austerity of Eskimo life, its enforced simplicity and the limitations set upon civilization for the people of the Arctics. Much of the interest of these pictures rests in the fact that many of the scenes represent localities actually visited by the artist. Mr. Stokes established his studio at Bowdoin Bay, 77° 44′ N. latitude, and worked there during fourteen months, with the primitive life of the Eskimo and the glowing colors of the northern land under constant observation. As William Walton has said in an article in Scribner's Magazine for February, 1909, Mr. Stokes has here succeeded, despite the inadequacy of pigments, in well suggesting "the utmost splendor of light that blazes in the Polar skies and glows in the Polar, translucent ice."

The North Wall.

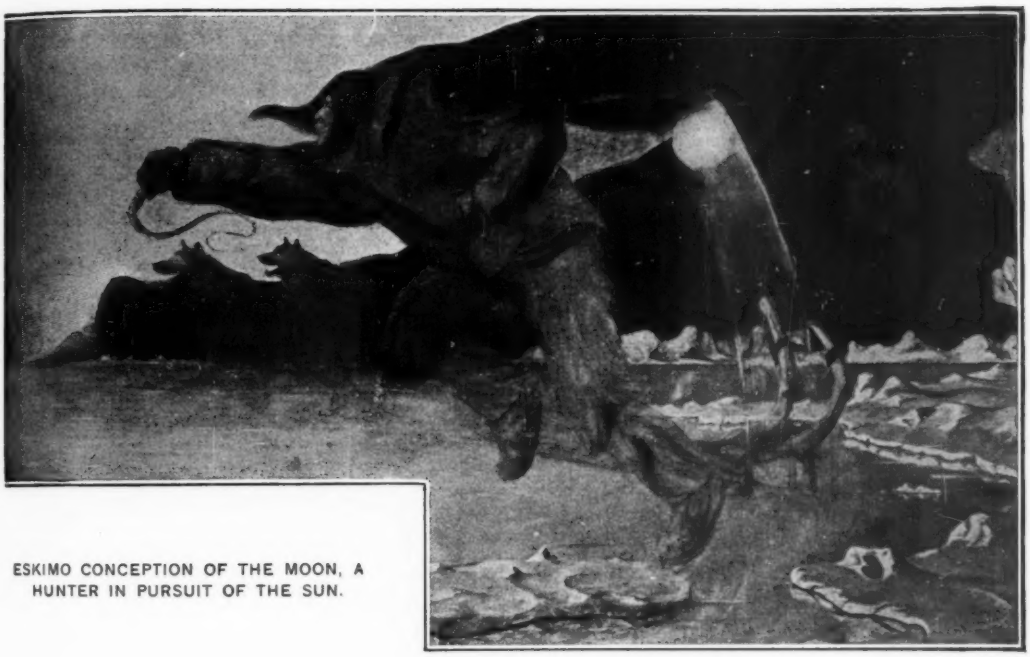
The largest picture of the series — in full view from the main foyer of the Museum — is a continuous panorama sixty feet long. It is intense and realistic in its coloring. In the center the glow of a midnight sun illuminates promontories and sea, toward the right this brilliant color gradually fades to the gray and purple of the twilight that precedes the long Arctic night, while toward the left it changes to the white lights and deep blue shadows of that other twilight that foretells the approach of the long Arctic day.



ESKIMO GODDESS OF THE SUN.
From the painting on the North Wall.

Copyright 1908 by Frank Wilbert Stokes.
Courtesy of Scribner's Magazine.

Against the vivid gold and red of the center of the painting is portrayed the artist's conception of the Eskimo myth of the "Sun and the Moon." There is presented a giant mirage of two figures in full pursuit through the air. These figures are Ahn-ing-ah-neh, a hunter, typifying the moon and ushering in the long winter, and Sukh-eh-nukh, standing for the sun, a goddess accompanied by summer and plenty. Ahn-ing-ah-neh is dressed in winter garb and is driving his team of dogs. The lower part of the figure, like the dogs and sledge, are shadowy in the painting, but the upper part reaching forward in the chase, the head and the right arm with its lashing whip, stand out strong and dark as the forward part of a night cloud that sweeps over the glacier-covered heights. Sukh-eh-nukh is represented by a figure uncovered to the waist (the Eskimo, both men and women, occasionally strip off the upper garments in the summer sun). She carries in her right hand an Eskimo lamp, shown as a sun-dog or parhelion such as is often seen near the horizon at sunrise and sunset in the Arctics. She is a part of a cumulus summer



ESKIMO CONCEPTION OF THE MOON, A HUNTER IN PURSUIT OF THE SUN.

Copyright 1908 by Frank Wilbert Stokes.
Courtesy of Scribner's Magazine.

cloud that floats near her head. Summer birds are about her, a long line following from the far away horizon. Two fulmar gulls are flying in front of her, and two harp seals are crying to her, the "Mother of the Seals," from floating ice below, where also little Arctic puffins are ranged in military line.

The story of the pursuit of the sun by the moon is a legend widely spread among the Eskimo people. The North Greenland Eskimo believe, as do all other Innuit from Alaska to Labrador and Baffin Land, that the sun was originally a woman, Sukh-eh-nukh, who in order to escape the unfilial love of her brother, Ahn-ing-ah-neh, fled into the heavens bearing a lighted torch. The brother also carrying a torch pursued her and was transformed into the moon. It is believed that the moon is forever in love with the sun and seeks ever to overtake her, but that since his torch chanced to be a poor one and he is frequently compelled to return to earth to relight it, the sun is enabled to keep well in

advance. According to the myth, disaster would come if he should succeed in catching her, for with his embrace would come the end of all things.

This legend of the sun and the moon has many variations among the Eskimo people and is sometimes termed the Sedna Cycle, Sedna also signifying the sun. It is possible that we have here not only an allegory of the great Arctic day and night, but also the proof that there has taken root in Eskimo imagination the idea of man's search after the unattainable.

Copyright 1908 by Frank Wilbert Stokes.

POLAR BEAR AT BAY.

From the painting on the North Wall.

The right portion of the painting, realistic in the extreme, represents the twilight before the approach of the long night, the dramatic interest resting in an encounter between an Eskimo hunter and a polar bear. The hunter has left his sledge and, accompanied by his team, has followed in the chase. He has used his arrows and is now near enough to give a thrust with his lance, the bear's attention being held by the dogs.

That part of the painting at the extreme left tells the Eskimo's method of stalking prey. In the foreground on an ice-floe a hunter, harpoon in hand, is crawling slowly toward two ring seals, which lie basking in the

sun near their hole. Eskimo hunters have great skill in giving decoy sounds. They can make cautious approach to gulls by waving a gull's wing in the air, while whistling the bird's notes; they can allay the suspicions of seals by lying flat on the ice and waving a foot in imitation of a seal's head, while giving the characteristic calls of the seals. Beyond the seal hunter in the distance rises above the ice of the glacier, a bell-shaped elevation of land which the Eskimo knows as a "nunatak." Still farther to the left towers an iceberg, while over all is the dawning light of the summer that is being ushered in by Sukh-eh-nukh, the sun goddess.

Copyright 1908 by Frank Wilbert Stokes.

ESKIMO STALKING THE SEAL.

From the Painting on the North Wall.

The East Wall.

The first or northern panel — An Innuit Encampment in Late Autumn.

Pictures of actual events in Eskimo life are continued on the east and west sides of the hall, the unity of the compositions being gained by making the sky line in the east and west panels the same as that of the

painting on the north wall. The three panels on the east wall continue pictures of Eskimo life as it goes on during the Arctic night.

The first of the panels gives a view of Inglefield Gulf, which by November is well frozen over. In the foreground to the right an Innuit (Memkashoo) is cutting up pieces of meat and feeding his team after a hunting trip. The sledge lies to the left, and just beyond is an Innuit woman with her babe carried on her back in a pouch. Such a pouch is made of fox skin and is a part of the hooded upper garment. The head and shoulders of the child are covered by soft fox skin, but the rest of its body lies naked against the mother's bare back and so is kept warm. The child is secured in the pouch by a sinew which passes around its body and around the upper part of the mother's waist.

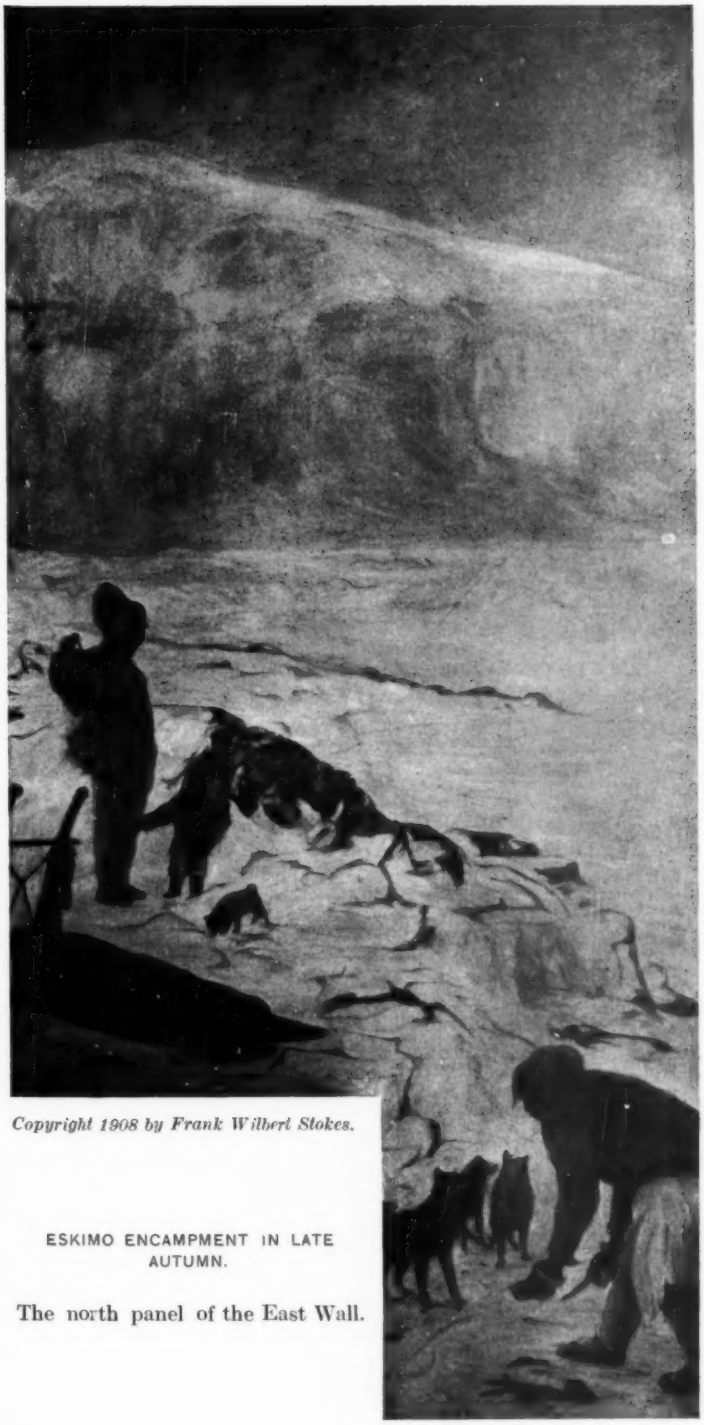
A little Innuit boy stands by his mother, watching his playmate, an Eskimo puppy. Immediately to the right is the stone-built entrance of the igloo, or winter residence, which, partly covered with snow, is itself seen directly behind the figures. The seal-entrail window of the igloo reveals a pale light from the lamp within, a lamp which must serve the purposes of lighting, heating, cooking and drying for the whole family.

Beyond in the middle distance to the left is a bay, its shore covered with snow which is about three inches in depth at this season. Beyond the bay is a long low promontory stretching into the sea, a November sea, completely frozen over and with an iceberg frozen into it. The stars are brilliant in the sky, while mountain, sea and shore are enshrouded in rich orange light from a sun that is gradually receding.

The Central Panel — Walrus Hunting in February.

The east central panel represents a February scene on the ice of Baffin Bay, which is never completely frozen over. The flaming colors of the Aurora Borealis fill the sky and are reflected by the ice. In their weird light is made visible the attack of an Innuit hunter upon a large walrus, one of a group of three in the central foreground of the picture. In the immediate foreground to the right a bull walrus is just emerging from the water. There is no look of fear in the animal's dog-like eye, since he has not yet caught sight of the hunter.

In the Arctics the barking of walrus can be heard for miles. When the Innuit hunter hears it, he may hitch six or eight dogs to his sledge



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ESKIMO ENCAMPMENT IN LATE AUTUMN.

The north panel of the East Wall.

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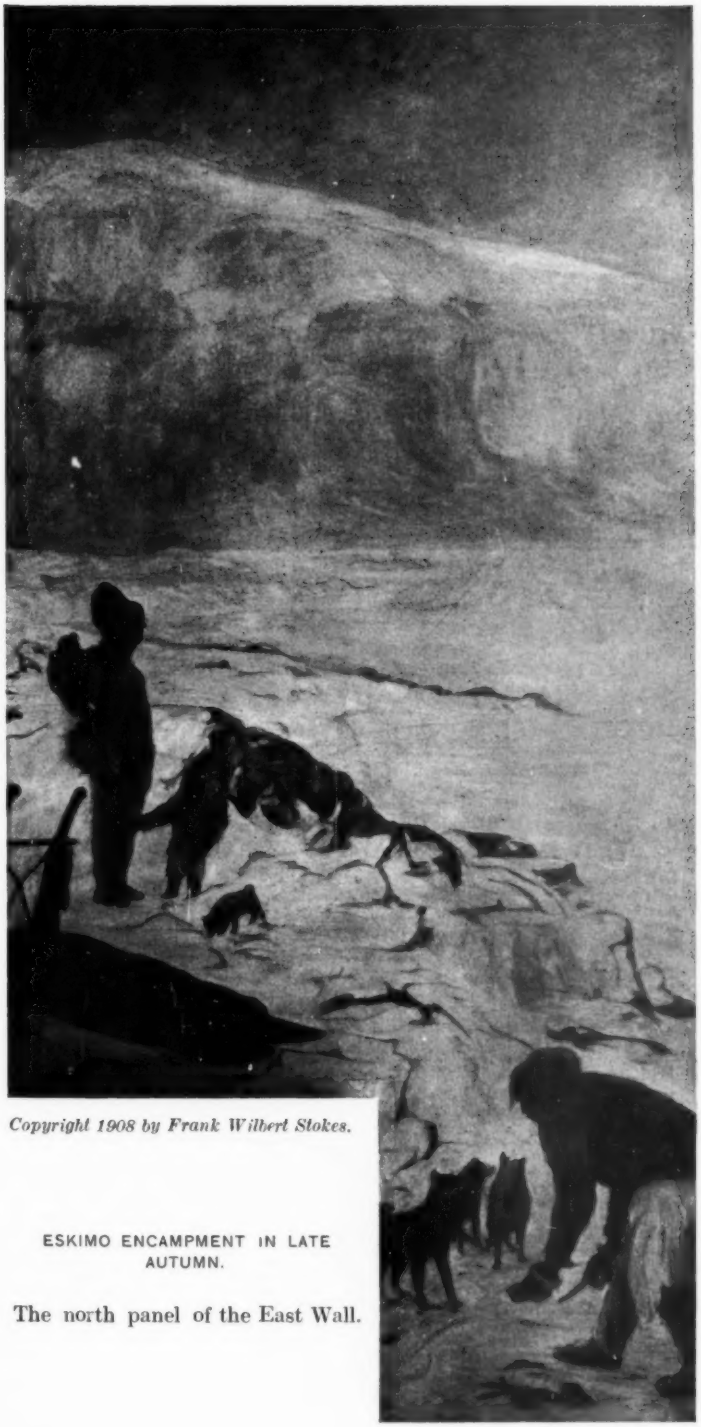

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ESKIMO ENCAMPMENT IN LATE AUTUMN.

The north panel of the East Wall.

Copyright 1908 by Frank Wilbert Stokes.

WALRUS HUNTING IN THE LIGHT OF THE AURORA BOREALIS.

The central panel of the East Wall.

and travel toward the sound, often with only the light of the moon or of the stars to show him the way. When within a thousand yards to the windward of the animals, he tethers his dogs to the ice, and if they are unaccustomed to hunting and will not remain noiseless, he may turn the sledge upside down, to check any attempt on their part to run away.

Armed with a stout harpoon and plenty of walrus-hide line, the Innuit crawls over the ice toward the animals. He conceals himself behind ice blocks or hummocks until the distance between him and the animals is short, then suddenly leaps to his feet, singles out a big bull (as in the painting) and strikes — usually with unerring aim. The whole herd, barking furiously, rushes for the sea. The stricken bull dives, and the walrus-hide line pays out rapidly, but not before the Innuit has deftly thrust his lance, which he carries in his free hand, firmly into the ice. With knee and shoulder braced against the shaft of the lance, he obtains sufficient purchase to play the walrus until the big fellow is so weakened by loss of blood that the hunter can leave his lance to cut two holes in the ice close to the spot where he is standing. Now, whenever the line is slack, he hauls in a few fathoms, and running the noose a couple of times down through one hole and across through the other, obtains a more reliable hold. With the lance now free, he stands over the breathing hole, striking the walrus each time that it rises. When it is finally despatched, he cuts off piece after piece of the meat and seeks his sledge and dogs to carry the spoil home.

Walrus are huge ungainly creatures, weighing upwards of three thousand pounds, but to the nimble Innuit hunter there is usually no difficulty in getting out of harm's way on the ice after he has struck the blow. If, however, the iron point slips, or the ice gives way, or if, as the coils of the line are running out, the hunter's legs become entangled, he is quickly dragged down beneath the water to speedy death.

The Third or Southern Panel. Peterawik in Moonlight.

The third panel represents a winter scene at Peterawik on the shore of Smith Sound. In the foreground at the extreme left is a hunter with sledge and dogs, bringing a load of walrus meat. His snow igloo is at the right, where his wife, carrying a child in her hood, and accompanied by an Eskimo woman, is waiting to welcome him. The sea-ice of Smith Sound stretches far to the horizon at the north; the head-line of Cape Alexander is visible in the distance. The rocks at the right are characteristic of the west coast of Greenland at this latitude, 76° N.

In the spring before the ice breaks up, the Innuit congregate at Peterawik for walrus hunting. They build their snow igloos on the ice foot, that portion of the sea-ice bordering the land. Here they remain

hunting, frolicking and feasting in their joyous fashion, until the sun's warmth has broken up the ice. Then they travel southward, still over the ice, some to the settlements of Inglefield Gulf and others even as far as Cape York.

The West Wall.

The First or Northern Panel — Reindeer Hunting in Summer.

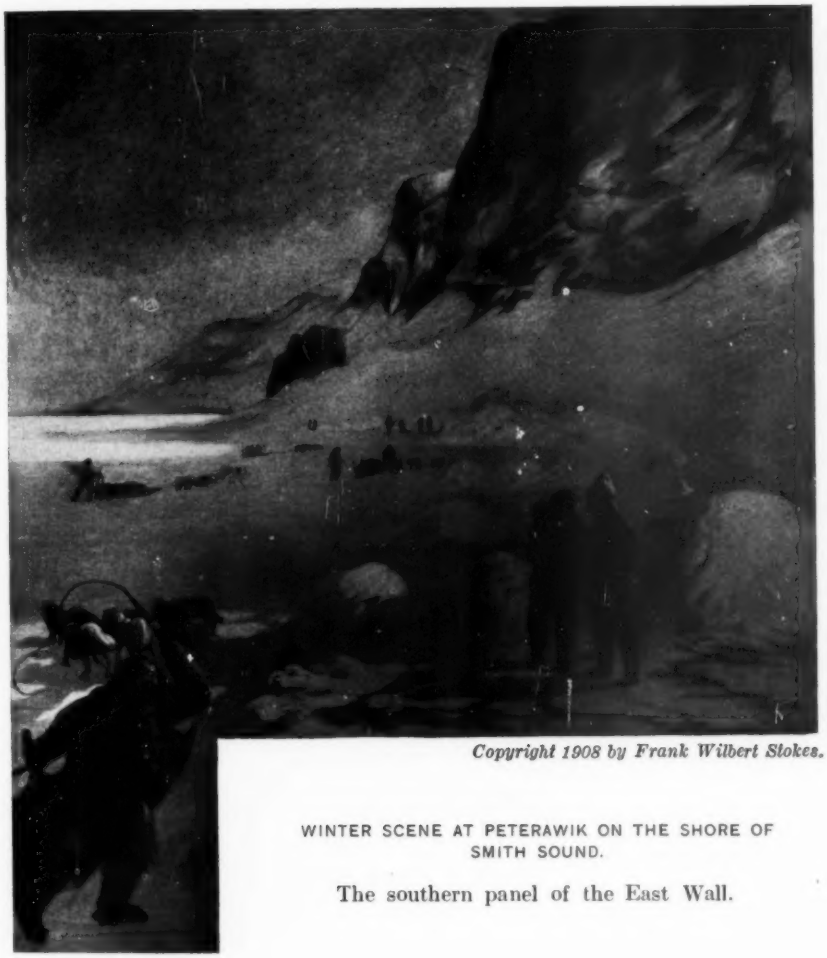
The paintings on the west wall represent Eskimo life during the long Arctic day.

In the middle foreground of the northern panel a hunter, crouching at the top of a rocky prominence, is in the act of drawing his bow of bone and sinew upon a white reindeer,[1] which has espied too late something to excite its curiosity. In the middle distance at the extreme right, is the continuation of the large iceberg of the central panel of the north wall. Icebergs in the Arctic regions are frequently from 150 to 300 feet in height, measure five to seven times this distance below the surface of the sea, and sometimes have a length of three miles. Beyond the iceberg in the distance is a glacier flowing down from the great ice "Sahara" in the interior of Greenland, while to the left is a dark rocky portion of the submerged land.

In the immediate foreground are purple flowers (*Epilobium latifolium*) which nestle in pockets in the rocks. The middle foreground is covered by stunted grass and mosses, especially by reindeer moss on which the deer are feeding. Many flowers bloom in Greenland and other polar lands during the short summer, notably members of the mustard family, and of the pink, rose, saxifrage and grass families. There is one species of sedge known; willows and birches are found, although growing only two to three inches in height; while daisies, buttercups, yellow poppies, harebells, dandelions, gentians and primroses cover the ground in many places.

Another source of bright color in these northern latitudes lies in two species of algæ, one red and the other green. They are microscopic plants that grow on the ice or snow, but they may occur in such profusion as to impart their color to the ground. It is the presence of these algæ

[1] A white caribou (*Rangifer pearyi* Allen) discovered by Peary in 1902 in Ellesmere Land near Lake Hazen, latitude 82° N.



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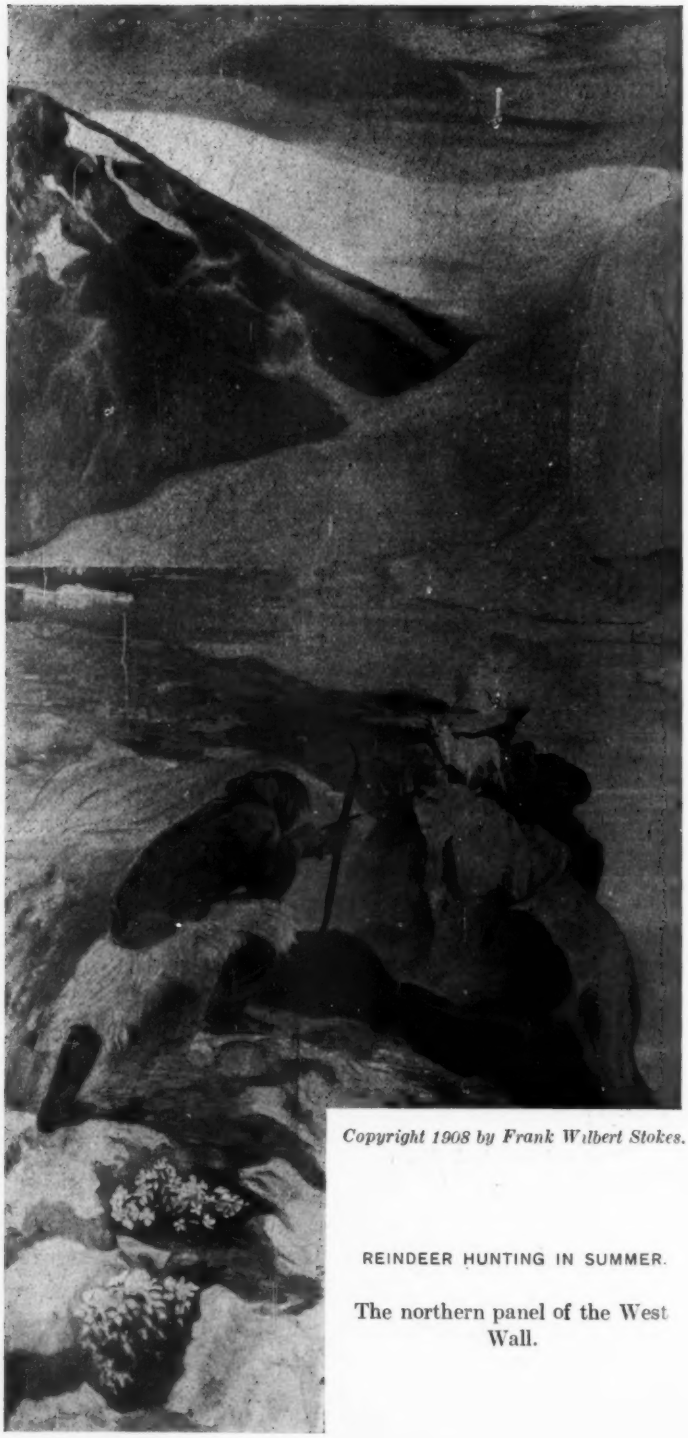
WINTER SCENE AT PETERAWIK ON THE SHORE OF SMITH SOUND.

The southern panel of the East Wall.

that explains the famous "crimson glacier" or "crimson snow" near Cape York.

As to edible plants, there are a few even in this extreme northern region. A blueberry which grows partly concealed under the moss can be secured during the greater part of the year, and is eaten with relish by the Innuit. There are several plants of which the roots, leaves, buds and even flowers are eaten. A plant resembling celery (*Archangelica officinalis*) is a favorite article of food. Iceland moss is also eaten. The chief sources of vegetable food, however, are marine. A



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REINDEER HUNTING IN SUMMER.

The northern panel of the West Wall.

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ESKIMO IN SEALSKIN CANOE HARPOONING A NARWHAL.

The central panel of the West Wall.

seaweed used commonly for food is *Alaria pylaii*, closely allied to "bladderlocks," of Scotland, and in flavor somewhat like asparagus.

The Central Panel — Narwhal Hunting in Summer.

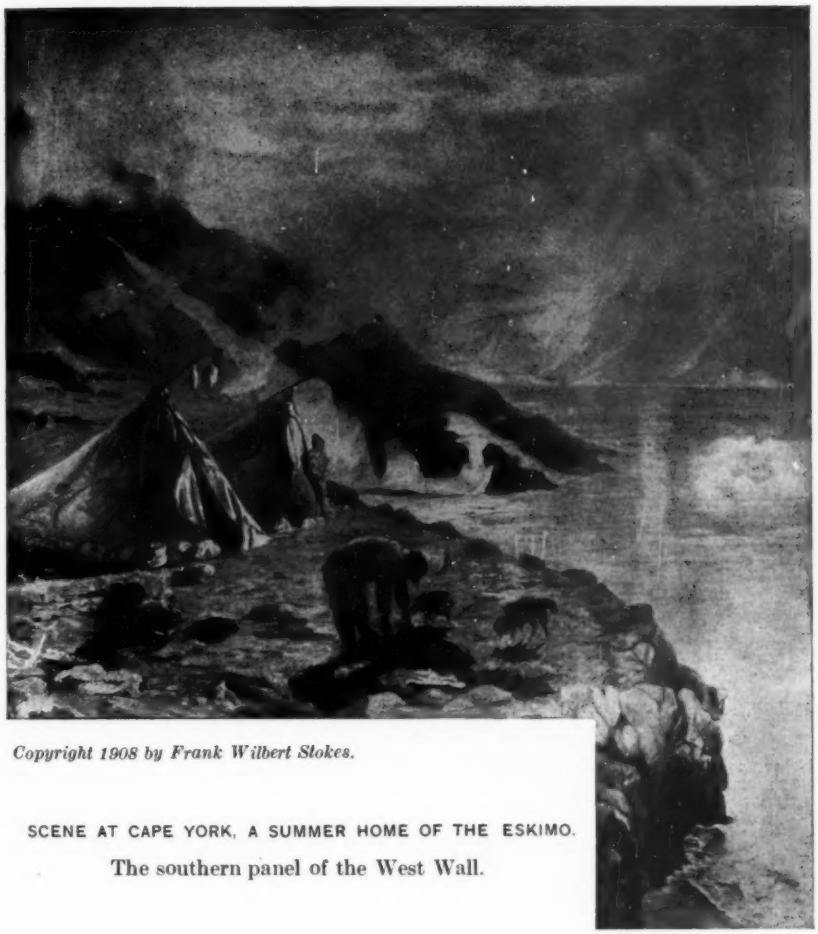
The dramatic center of this panel is an Innuit in his kayak or sealskin canoe in the act of harpooning a narwhal, which is visible beneath the

surface of the water at the left of the boat. To the right in the middle distance are fulmar gulls. In the distance is the great ice river, the Verhoeff glacier.

The narwhal is an animal about which little is definitely known. Some, notably Peary, think that it is the fabled unicorn of the ancients. It occasionally has both a long and a short horn, one of which it may lose, however. The narwhal is blue-black along the back and spotted with dark along the sides, the color fading into ivory white underneath. The thin skin covers a very deep layer of fat or blubber, considered a delicacy by the Innuit. This blubber is eaten raw, as in fact is most of the food in the Arctics, and of course without pepper or salt, neither of which is known to the Eskimo.

In narwhal hunting, the Innuit approaches the animal from the rear and one side, decreasing the distance noiselessly until he is within striking distance. A companion always accompanies the hunter, so that, in the event of his being struck by the narwhal, and his boat overturned, there may be some rescue at hand. The harpoons used in narwhal hunting formerly had heads made of flakes from the iron meteorites near Cape York, but since the first quarter of the nineteenth century the Eskimo have obtained their metal from traders and from whaling and other ships. The harpoon head is joined to a piece of walrus or narwhal ivory, which fits loosely on to the ivory end of the shaft. To the center of this harpoon head, is fastened a line of walrus hide kept in place by the hand that holds the harpoon. The line itself is coiled on the fore part of the kayak, so that it will unwind rapidly and without becoming tangled. Attached to the other end of this line and placed in the after part of the kayak are two objects, a sealskin bag and a drag resembling a box lid. When the animal dives and flees vainly from the pain of the harpoon point imbedded in its flesh, the drag tires it out, and the skin bag, floating on the surface of the water, marks its position and keeps it from sinking. The hunter, who adroitly gets out of the way of the infuriated animal, can thus trace its course and finally tow it home.

The Verhoeff glacier represented in the painting is one of two glaciers at the head of Robertson Bay, on the northern shore of Inglefield Gulf, West Greenland. It was here that Verhoeff, the meteorologist of one of the Peary Expeditions, while trying to cross the glacier alone, lost his life in September of 1892. The sea wall of the glacier is from 150 to



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SCENE AT CAPE YORK, A SUMMER HOME OF THE ESKIMO.
The southern panel of the West Wall.

200 feet high, but the ice shelves out beneath the water, where the buoyancy of the sea breaks off parts which float away as icebergs. This birth of icebergs at the water's edge of a glacier often causes waves thirty or forty feet in height, miles in extent, and attended by volleys of thunderous reports that are terrifying in the ears of the Eskimo. Each of these glaciers is an arm of the inland ice cap of Greenland, a mighty sheet submerging mountains and valleys to a depth of 5,000 feet or more.

The Third or Southern Panel — Cape York, a Summer Home of the Innuit.

The scene depicted is at Cape York, a summer home of the Innuit, at the head of Melville Bay. Here the Innuit, or Arctic Highlander, as he was misnamed by Sir James Ross, is first met by those visiting the Arctics. The painting gives a view of Cape York looking toward the north.

In the foreground is the camp, where an Innuit leans over a harp-seal which he has killed and is about to cut up, while his dogs are watching for some stray pieces of meat. This man is clothed in bear-skin trousers and a hooded jacket made of about seventy auk skins, the feathers being turned next to the body. He is wearing boots of seal-skin.

To the left in the camp is a girl of about seven years, painted from a sketch made by the artist in 1894. She is clothed in small trousers of fox skin and an upper hooded garment, also of fox skin, and wears boots of sealskin, reaching to the thighs. She is attending a fire of moss and blubber, over which blood soup is being prepared, while guarding from the dogs a piece of meat on the ground at her right. Behind the girl are two sealskin tents (tupekhs) from one of which a young woman is emerging.

Beyond the tents are mountains towering 1500 to 3000 feet above the camp. The summits of these mountains are frequently obscured by dense fogs, from which come continually the wild cries of innumerable multitudes of kittiwake gulls and little auks.

In this bay, but some miles to the eastward, the three meteorites now on exhibition in the foyer of this museum remained for ages. It was Peary who wrested them from their ancient abode and brought them to New York in 1895. From these meteorites, in olden times, the Innuit flaked off pieces for use in knives, harpoons and arrow heads, to aid in the struggle for food and life.

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